THE NEW SCREWWORM THREAT

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THE NEW SCREWWORM THREAT

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Screwworms were on the rampage in Texas and other southwestern states again in 1972. Texas livestock producers in about 240 counties reported more than 90,000 screwworm cases — by far the worst outbreak since 1962 when the Southwest Screwworm Eradication Program began (figure 1).

1962	1963	1964	1965	1966	1967
49,484	4,916	223	446	1,203	835

1968	1969	1970	1971	1972
9,268	161	92	444	90,000+

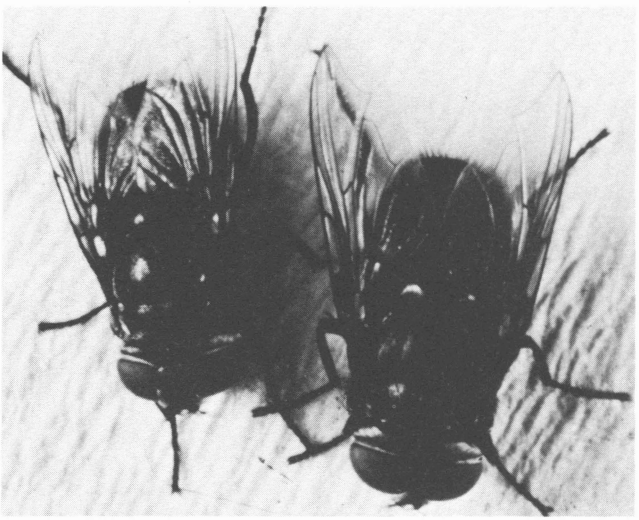
Fig. 1. Number of screwworm cases reported in Texas since eradication program began.

Eradication officials attribute the 1972 outbreak to larger than normal overwintering populations which exploded during late winter and early spring. Favorable moisture and temperature conditions in late summer and fall of 1971 allowed larger population buildups further north in the state than usual. This was followed by an unusually mild winter which allowed screwworms to survive far north of their normal overwintering range. Heavy screwworm activity in northern Mexico also continued during the winter to provide a menacing source of flies with the potential to overwhelm intensive eradication efforts.

The eradication program since 1962 has saved Southwest livestock producers more than $1 billion in losses. Although 1972 was a serious setback, officials are optimistic that winter conditions have eliminated screwworms from most of the Southwest and reduced their overwintering range to extreme South Texas and Mexico where populations can be effectively restricted during 1973. With favorable weather and conscientious producer cooperation, all or most of Texas and the Southwest can again be free of screwworms during 1973.

THE SCREWWORM MENACE

The screwworm, the maggot of one of a group of insects commonly called blow flies, infests practically all kinds of wild and domestic animals, poultry and man, but is more common among cattle, hogs, deer, sheep and goats. Screwworms infest only wounds of warm-blooded animals and attack only living flesh. Some maggots infesting these wounds may be from other blow flies which breed in carcasses. Carcass-breeding maggots usually are found feeding on soiled wool or in wounds containing decaying blood and tissue.



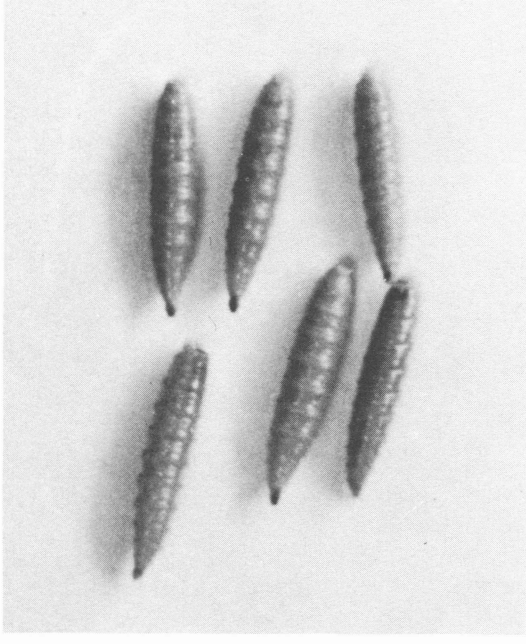
The screwworm fly, about twice as large as a housefly, is bluish-green with three longitudinal black stripes on its back.

The screwworm fly is about twice the size of a housefly and is bluish-green with three dark stripes on its back. Full-grown screwworm maggots, about ¾ inch long, have noticeable rows of spines that surround their bodies, giving them the screw-like appearance from which their name is derived. The front end of the screwworm tapers and contains the mouth hooks.

The true screwworm is distinguished from common blow fly maggots by the presence of two dark parallel air tubes. These tubes in full-grown screwworm maggots are readily visible with the naked eye, but are scarcely visible in common blow fly maggots. Most common blow fly maggots have white, yellow or gray colors. Screwworms have a pinkish tinge when they have completed feeding and are about ready to leave the wound. The only sure way to identify a screwworm case, however, is to collect maggots for microscopic examination by a specialist. Collection kits

Screwworm-infested wound with flies and egg mass.

are available from county Extension agents. Ten or more maggots should be collected from the wound and submitted to the SCREWWORM ERADICATION LABORATORY, P.O. BOX 969, MISSION, TEXAS 78572.



Mature screwworm larvae extracted from an infested wound.

Life History

The screwworm has four developmental stages: egg, larva (maggot), pupa and adult fly. A female fly may produce up to 3,000 eggs which she deposits on wounds in masses of 200 to 400 each during her lifetime of 2 to 4 weeks. Within 12 to 24 hours, eggs hatch into maggots which feed on the flesh for 5 to 7 days and then drop out of the wound to pupate ½ to 1 inch below the soil's surface. In warm weather, flies emerge from pupae after 7 to 10 days and work their way to the soil's surface. During the first few days of their adult life flies feed on the liquids of manure, meat and exudate from wounds, as well as nectar and plant juices. Flies usually mate when they are 2 days old. Females mate only once, but the males mate several times. After females are 5 to 6 days old, they seek wounded animals on which to deposit their eggs. About 21 days are required for the screwworm to complete a life cycle.

Nature of Damage

Maggots feed with the tapered head deep in the wound with only the blunt hind end exposed for breathing. The screwworms continually tear and rasp away living flesh, gouging out deep wounds which exude a brownish, bloody discharge. The maggots usually feed so deeply that only close observation reveals them projecting just above the surface of the bloody discharge. The bloody, characteristically foul-smelling wound attracts additional flies which deposit more eggs on or near the wound; consequently, thousands of maggots may infest a single wound. Single, neglected infested wounds can cause death of young animals and are often fatal in grown animals also.

SCREWWORM ERADICATION PROGRAM

Since 1962, the U.S. Department of Agriculture laboratory at Mission has produced and mass-released sterile screwworm flies, the males of which mate with native females. Because the native females mate only once, overwhelming native males with massive sterile male releases results in eventual self-annihilation since eggs laid by native females mated to sterile males do not hatch. When native populations are at low levels, chances for sterile mating are very *high.* On the other hand, when native populations are high, chances for fertile matings are *high.*

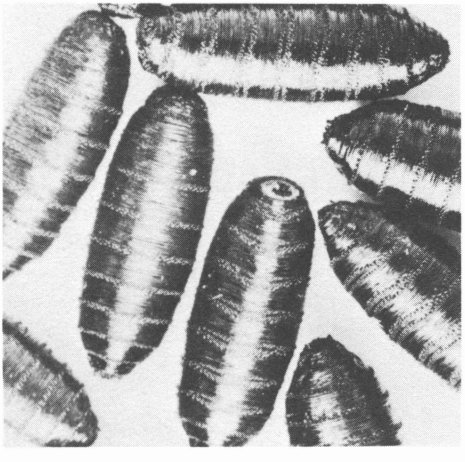
Two hundred million screwworm flies are produced at the Mission laboratory each week. Maggots are produced

in large rearing vats and the pupae are collected at the end of the larval development period. The pupae are then exposed to sterilizing doses of atomic radiation from a Cobalt 60 source, packaged in cartons and stored until adult flies emerge. Flies are then distributed at carefully calculated release rates at required intervals in infested areas where the sterile males mate with native, fertile females. If native infestations are low, an outbreak can be brought under control in a matter of weeks. The larger the native outbreak, the more difficult it is to eliminate screwworms through sterile male releases.

WHAT YOU CAN DO

Each treated or prevented screwworm case can avert the development of several hundred screwworm flies, each of which can infest several additional animals. Just one unnoticed or untreated case can produce enough flies to severely infest an entire area. The seriousness of the 1972 outbreak demands that all livestockmen and pet owners take the following action:

1. Inspect animals at least twice a week for wounds. Treat all wounds and navels of new born animals with a protective material[1/] regardless of whether they are infested.
2. Postpone animal surgery until cold weather when screwworms are inactive. If surgery absolutely must be performed, treat wounds thoroughly with a screwworm protectant [1/], inspect daily until completely healed and retreat wound as necessary.



Screwworm pupae develop ½ to 1 inch below the soil's surface.

3. Spray animals every 2 to 3 weeks until cold weather, if possible, with preventive sprays containing 0.25 percent coumaphos (Co-Ral®)or 0.5 percent ronnel (Korlan®)[1/]. These materials also control horn flies, ticks and lice and help to reduce populations of stable flies and horse flies. These treatments also control screwworms which might be undetected in small or obscured wounds.

4. Spray animals with one of the above materials before shipping to another area as a preventive measure against spreading possible infestations.

5. Upon receipt of livestock shipments from other areas, check each animal thoroughly for wounds or screwworm infestations. Treat all wounds and observe daily until healed.

6. If worm-infested wounds are found, collect a sample and mail to the Screwworm Eradication Laboratory, Box 969, Mission, Texas 78572. Eradication officials *must* know where and how many screwworms cases are occurring to properly plan sterile fly release programs.

Wound Treatments

Several screwworm remedies and wound protectants are available commercially from livestock and veterinary

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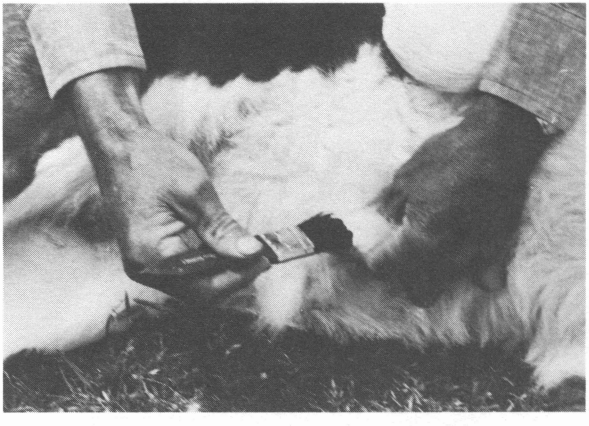
[1] *Note: All insecticides on livestock must be used in strict accordance with label precautions and restrictions. Carefully read and follow the product label before using to avoid possible contamination of meat or milk or animal injury.*



Protective treatment of navels of new-born animals is a must during screwworm outbreaks.

supply outlets. These materials, sold under several brand names, are formulated as viscuous smears, dusts, liquids and pressurized aerosols. Insecticides commonly used in these formulations include coumaphos (Co-Ral®), ronnel (Korlan®) and lindane. Restrictions on using these materials vary according to the class of livestock being treated. Be sure to thoroughly read the product label to determine whether it is appropriate for your use and follow any other restrictions listed.

Prevent Livestock Injuries

Protruding nails, barbed wire, obstacles or crowded conditions increase chances of livestock injuries which invite screwworm attack. Protect your animals by eliminating any conditions that might cause unnecessary cuts or scratches.

Support the Eradication Program

Practice good livestock management. Follow preventive measures. Inspect your herds regularly. Collect and report suspected screwworms. Treat all wounds and infestations. Encourage your neighbors to do the same. *Your full cooperation can prevent screwworm outbreaks and provide necessary support for sterile fly releases.*

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For additional information or assistance, contact your local county Extension agent or the Extension entomologist, Texas A&M University, College Station, Texas 77843.

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